REMARKS

As a preliminary note, Applicant requests acknowledgement from the Examiner of the IDS filed with the application on 8/4/99 listing nine references. The present Office Action attached the PTO-1449 from the Supplemental IDS filed on 8/18/00, but not the PTO-1449 filed on 8/4/99.

In the Office Action dated December 4, 2002, claims 1-26 were rejected under 35 U.S.C. § 102 over U.S. Patent No. 6,430,417 (Raith). Applicant respectfully traverses the rejection.

At least two elements of claim 1 are not disclosed by Raith. First, claim 1 recites time slots being *time synchronized among the cell segments*. The Office Action pointed to the passage at the bottom of column 5 (lines 55-67) as teaching this feature. In the last sentence of column 5, Raith states that in transmitting a burst (from a burst generator 110 within a mobile station), the "burst, which is equivalent to one time slot, is synchronized with the transmitting of the other two time slots . . . ." Raith, 5:66-6:1. Note that this passage refers to synchronizing time slots of a frame by *one* mobile station. Nothing is said about synchronizing time slots *among cell segments*.

Another feature not disclosed by Raith is the transmitting of control signaling in time slots adjacent *time slots allocated as guard periods*. Raith discusses the use of two alternative access methods, depending on whether a cell is a small cell or a large cell. If a cell is a small cell, then Raith teaches the use of a full-length burst for use by the mobile station to access a base station. If a cell is a large cell, then Raith teaches that the mobile station uses a short burst to access a base station. Raith, 11:5-22. In a short burst, which is taught by Raith as being equivalent to a time slot, guard periods are defined in the short burst (shown in Fig. 5F of Raith) to protect information carried within the short burst. Thus, use of the short burst of Raith is not the same as allocating a time slot as a guard period. Therefore, Raith does not disclose transmitting control signaling in time slots *adjacent time slots allocated as guard periods*, to protect control signaling in a time slot of a first cell segment from interference by traffic signaling in another time slot of a neighboring cell segment.

For the foregoing reasons, claim 1 is allowable over Raith.

With respect to independent claim 7, Raith does not disclose *providing predetermined time slots as guard periods* to reduce likelihood of interference, as explained above. Raith also does not disclose another feature of claim 7, namely providing a channel reuse pattern that is based on a plurality of channel frequencies *and a plurality of time groups*. There is no mention whatsoever within Raith of providing such a channel reuse pattern, which is based both on frequency and time. In fact, the Office Action provides no citation to any specific passage in Raith that teaches this feature of claim 7.

Independent claim 11 is allowable over Raith because Raith fails to teach communicating control signaling in predetermined time slots of predetermined frames, and *communicating idle periods in time slots adjacent the predetermined time slots of the predetermined frames*.

Independent claim 17 is allowable over Raith because Raith does not disclose a controller to define guard periods *each including at least one time slot* to protect control signaling communicated in a time slot from interference due to overlap of time slots in neighboring cell segments. Also, Raith fails to teach that time slots are synchronized *among cell segments* as recited in claim 17.

Independent claim 21 is allowable over Raith because Raith fails to teach allocating predetermined time slots in a frame as guard periods to reduce likelihood of interference. Raith also fails to teach providing an effective N/(3*N) channel reuse pattern as based on both frequency and time.

Independent claims 22, 24, and 25 are allowable over Raith for at least some of the reasons given above with respect to the other independent claims.

In view of the foregoing, it is respectfully submitted that all claims are in condition for allowance, which action is respectfully requested. The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 20-1504 (NRT.0004US).

Respectfully submitted,

2-20-03

Date

Dan C. Hu, Reg. No. 40,025
Trop, Pruner & Hu, P.C.
8554 Katy Freeway, Ste. 100
Houston, TX 77024
713/468-8880 [phone]
713/468-8883 [fax]

APPENDIX

New claims 27 and 28 are added. The original claims, unamended, are in smaller font.

1. A method for use in a mobile communications system having a plurality of cell segments, comprising:

communicating control and traffic signaling in a frame having a plurality of time slots in each cell segment, the time slots being time synchronized among the cell segments; and

transmitting control signaling in time slots adjacent time slots allocated as guard periods to protect the control signaling in a time slot of a first cell segment from interference by traffic signaling in another time slot of a neighboring cell segment.

2. The method of claim 1, wherein transmitting the control signaling includes transmitting the control signaling in every other time slot of each frame.

3. The method of claim 1, wherein communicating the control and traffic signaling includes communicating the control signaling in odd time slots of each frame.

4. The method of claim 1, wherein each time frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein the transmitting includes transmitting the control signaling in time slots 1, 3, and 5.

5. The method of claim 1, wherein each time frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein the transmitting includes transmitting the control signaling in time slots 1, 3, 5, and 7.

6. The method of claim 1, wherein transmitting the control signaling includes transmitting one of a synchronization burst and a frequency correction burst.

7. A method for use in a mobile communications system having a plurality of cell segments, comprising:

defining a plurality of channels and a frame having a plurality of time slots;

providing a channel reuse pattern that is based on a plurality of channel frequencies and a plurality of time groups, wherein signaling is transmitted in different time slots of the frame in corresponding time groups; and

providing predetermined time slots as guard periods to reduce likelihood of interference of signaling due to overlap of time slots in neighboring cell segments.

8. The method of claim 7, wherein providing time slots as guard periods includes setting the time slots to be idle.

9. The method of claim 7, wherein the defining includes defining a frame having eight time slots.

10. The method of claim 9, further comprising allocating control signaling to be carried in odd time slots of each frame.

11. A method for use in a mobile communications system, comprising:

carrying control signaling in a multiframe that includes a plurality of frames, each frame including a plurality of time slots;

communicating control signaling in predetermined time slots of predetermined frames; and

communicating idle periods in time slots adjacent the predetermined time slots of the predetermined frames.

12. The method of claim 11, wherein each frame includes eight time slots, and wherein communicating the control signaling includes communicating the control signaling in odd time slots of the predetermined frames.

13. The method of claim 12, wherein communicating the idle periods includes communicating the idle periods in even time slots of the predetermined frames.

14. The method of claim 13, wherein each frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein communicating the control signaling includes communicating the control signaling in time slots 1, 3, and 5, and communicating the idle periods includes communicating the idle periods in time slots 0, 2, and 4.

15. The method of claim 13, wherein each frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein communicating the control signaling includes communicating the control signaling in time slots 1, 3, 5, and 7, and wherein communicating the idle periods includes communicating the idle periods in time slots 0, 2, 4, and 6.

16. The method of claim 11, further comprising communicating traffic in at least some of the frames other than the predetermined frames.

17. Apparatus for use in a mobile communications system having a plurality of cell segments, comprising:

an interface unit capable of communicating with the cell segments; and

a controller adapted to control communications of control and traffic signaling in a frame having a plurality of time slots in each cell segment, the time slots being synchronized among the cell segments, the controller further adapted to define guard periods each including at least one time slot to protect control signaling communicated in a time slot from interference due to overlap of time slots in neighboring cell segments.

18. The apparatus of claim 17, wherein the controller is capable of communicating packet data between a data network and a mobile unit in one of the cell segments.

19. The apparatus of claim 18, further comprising a second controller capable of communicating circuit-switched traffic between mobile units in the cell segments.

20. The apparatus of claim 17, wherein the controller is adapted to define a channel reuse pattern based on frequencies and time groups, control signaling being carried in different time slots of the frame in corresponding time groups.

21. A method for use in a mobile communications system having a plurality of cells each divided into three sectors, comprising:

allocating a channel frequency to each cell sector;

defining N time groups;

defining a frame having eight time slots;

providing an effective N/(3*N) channel reuse pattern that is based on the channel frequencies and the plurality of time groups, wherein signaling is carried in a different time slot of the frame in each time group; and

allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors.

22. A method for use in a mobile communications system having a plurality of cell segments, comprising:

measuring control signaling carried in one or more of a plurality of time slots of a frame in a first cell segment and in a neighboring cell segment; and

receiving control signaling in a first time slot adjacent a second time slot defined as part of a guard period to reduce likelihood of interference caused by overlap of time slots between the first cell segment and the neighboring cell segment.

23. The method of claim 22, wherein the measuring includes measuring control signaling in time slots that are synchronized between the first and neighboring cell segments.

24. A mobile unit for use in a mobile communications system, comprising:

a transceiver to transmit and receive control and traffic signaling carried in frames each having a plurality of time slots; and

a control unit adapted to receive control signaling carried in time slots adjacent idle time slots defined as guard periods.

25. An article including one or more machine-readable storage media containing instructions for controlling communications in a mobile communications system having a plurality of cell segments, the instructions when executed causing a controller to:

define a frame having a plurality of time slots;

synchronize time slots among the cell segments; and

allocate predetermined time slots as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell segments.

26. The article of claim 25, wherein the one or more machine-readable storage media includes instructions that when executed further cause a controller to:

communicate over a plurality of channels with the frame; and

provide a channel reuse pattern that is based on a plurality of channel frequencies and a plurality of time groups, wherein signaling is transmitted in different time slots in corresponding time groups.

27. (New) The method of claim 1, wherein transmitting control signaling in time slots adjacent time slots allocated as guard periods comprises transmitting control signaling in time slots adjacent entire time slots allocated as guard periods.

28. (New) The method of claim 11, wherein communicating idle periods in time slots comprises communicating idle periods in entire time slots.